REMARKS

Claims 1-22 are currently pending. The Applicants are herein amending claim 1. The Applicants are herein adding new claims 21-22.

The Applicants respectfully request the Examiner to acknowledge the priority claim to U.S. Provisional Application No. 60/173,076, filed 12/24/1999.

Claims 1, 10, 11, 12, 15, and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ozeki (U.S. Patent No. 6,317,242) in further view of Auracher (U.S. Patent No. 4,548,464).

The Applicants traverse this rejection. In addition, the Applicants have amended claim 1 to more clearly define the invention. The Applicant notes that the amendments are not intended to narrow the scope of the originally claimed invention. Rather, the amendments are intended to maintain or broaden the scope of the claimed invention by eliminating extraneous limitations, and expressly stating that which was previously implied in the phrase "scattering medium." In particular, a scattering medium is generally configured with dispersive particles (e.g., powder, crystals, or other dispersive elements).

As a preliminary matter, the Applicants do not concede that Ozeki has a priority date prior to the Applicants' date of invention. However, in order to move this case to allowance, the Applicants will now discuss the deficiencies associated with Ozeki, as well as those associated with Auracher.

In order for the cited references to render the claimed invention unpatentable, the references as a whole must disclose or otherwise suggest each and every limitation recited in the claims. MPEP § 2143. Neither of Ozeki or Auracher, or their combination satisfy this standard.

The Applicants' claim 1 recites, in part, "An intra chip or intra mutli-chip module on a shared substrate multi-wavelength optical communication system comprising: ... a shared waveguide ... including a scattering medium configured with dispersive particles for transmitting emitted radiation to said detectors. In addition, each of the new independent claims 21 and 22

each define, in part, "A multi-wavelength optical communication system comprising: ... a shared waveguide for transmitting radiation from the emitters to the detectors, the waveguide including a scattering medium configured with dispersive particles."

Thus, the claimed invention is limited to having a shared waveguide that includes a scattering medium configured with dispersive particles. Note that this "scattering medium" associated with the waveguide is distinct from scattering mechanisms associated with the emitters. For example, a scattering mechanism associated with the emitters is later defined in dependent claim 3. In particular, claim 3 defines the emitter as including "a scattering grating for redirecting the emitted radiation laterally through said shared waveguide." Further note that the "scattering medium" recited in claim 1 is distinct from a "reflective medium" for containing scattering radiation, as later defined in dependent claim 17.

As correctly noted by the Examiner, Ozeki fails to disclose a waveguide including a "scattering medium" as recited in the Applicants' claims. In effort to correct this deficiency, the Examiner further notes that figure 3 of Ozeki shows optical signals being transmitted in different directions, and states that it would have been obvious to include a scattering medium in the Ozeki optical bus system. The Applicants disagree with the Examiner's characterization of Ozeki and the official notice here for the following reasons.

Ozeki discloses an optical bus system that operates with a conventional channeling function. In particular, the optical bus is coupled between a number of light sending units 43a and light receiving units 43b. Each of the light sending units 43a generates a different light signal. Each of the signal light receiving units 43b has a signal separating unit 43b1 that separates an intended or target signal component from all light signal components generated by the light sending units 43a. (col. 7, lines 35-46; figure 2). The optical bus may further include a reflecting layer 62 that reflects signal light propagated through the optical bus toward the opposite edge. (col. 8, lines 38-43; figure 3). Significantly, the transmitted light is channelized (as opposed to scattered), as indicated by Ozeki's figures, which show light emitting from the respective light transmitters. The emitted light freely propagates through the optical bus, and is either received at a receiving unit 43b or reflected by the reflecting layer 62.

However, there are no collisions with a scattering medium during propagation between the emitters and the receivers or reflectors. Nor is there a suggestion as to why a scattering

medium would be needed or how it would be implemented. The Examiner suggests that the light signals are transmitted in different directions as indicated by the arrows shown in Ozeki's figure 3. The Applicants respectfully submit that the arrows referred to by the Examiner merely indicate normal propagation from the source and uniform reflection off of reflecting layer 62. Even if the different directions were indicative of scattering, the scattering mechanism would be associated with the emitters, and not with the optical bus. As previously explained, such a scattering mechanism is distinct from a scattering medium included in the optical bus. To that end, the Examiner further suggests that it would have been obvious to modify Ozeki to include a scattering medium.

The Applicants strongly disagree with the Examiner. The use of a scattering medium is not trivial, and depends on a number of factors, such as the detector type, the desired detection and absorption efficiency, wavelengths being detected, and the number of unique detectors employed and the spacing therebetween. In further support of the Applicants' position, note that Auracher discloses that the "dynamic range and frequency resolution of the planar frequency analyzer are essentially limited by light scatter which occurs in the waveguide." (col. 5, lines 42-44). This is why Auracher attempts to *reduce* light scatter (as opposed to facilitating light scatter) as will be explained. With these points in mind, and with regard to the Examiner's official notice, note that MPEP § 2144.03 requires "assertions of technical fact in areas of esoteric technology must always be supported by citation of some reference work" and "allegations concerning specific knowledge of the prior art, which might be peculiar to a particular art should also be supported." As such, the Applicants respectfully request the Examiner to provide a reference disclosing a system as recited in claims 1-22, having a shared waveguide that includes a scattering medium.

The Examiner cites Auracher as disclosing an apparatus where signals are transmitted from a transmitter to a detector over a scattering medium. However, the Applicants understand Auracher to actually be teaching away from scattering, and therefore submit that Auracher does not remedy the deficiencies associated with Ozeki. In more detail, Auracher discloses use of a collimation lens L1 for collimating of light coming from the light source. This lens L1 channelizes the light traveling through waveguide WL1, as shown in each of figures 1-8 and discussed at respective sections of Auracher's disclosure (col. 4, lines 11-12; col. 5, lines 27-28,

and lines 33-34; col. 7, lines 19-20). Auracher further discloses that waveguide WL2 exhibits an even lower scattering value compared to waveguide WL1. (col. 4, lines 44-45). Auracher further discloses that the selective spacing between collimation lens L1 and lens L2, in conjunction with the use of a light absorber Ab, provide even "further reduction of the light scatter at the detector array DZ." (col. 6, lines 5-7). Auracher further discloses that a high dynamic range for the frequency analyzer is achieved with the provided reduction of light scattering in the analyzer's waveguide.

Thus, the Applicants respectfully submit that Auracher is actually teaching away from the claimed invention, by disclosing a channelized apparatus that is designed to minimize scattering, thereby providing high dynamic range. To that end, the Applicants further submit that Auracher fails to remedy the deficiencies associated with Ozeki, and further supports the Applicants' position that the Examiner's official notice relevant to including a scattering medium in the shared waveguide as recited in claims 1-22 is improper.

For at least these reasons, the Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Claims 2-9 and 13-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ozeki in further view of Frankel (U.S. Patent No. 6,096,496).

The Applicants traverse this rejection.

As a preliminary matter, the Applicants do not concede that Frankel has a priority date prior to the Applicants' date of invention. Nor do the Applicants concede that the combination of Ozeki (directed to an optical bus system) and Frankel (directed to a combinatorial chemistry bead) is proper. However, in order to move this case to allowance, the Applicants will now discuss the deficiencies associated with Frankel.

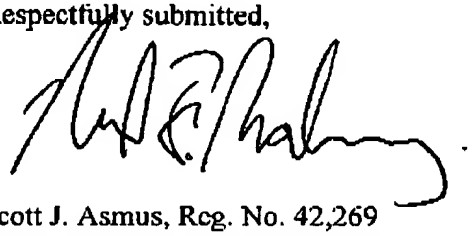
Frankel discloses a combinatorial chemistry bead that includes an electromagnetic spectral emitter. The emitter radiates a distinct electromagnetic code that uniquely identifies the bead. Frankel further discloses a large number of spectrally narrowed light emitting mechanisms for generating distinct optical codes. (Abstract; col. 11, lines 4-13; col. 12, lines 58-64). Some of these emitters include scattering mechanisms. (Fig. 9, 905; Fig. 10, 1005; Fig. 11, 1104; Fig. 13, 1304; Fig. 14, 1404a, 1404b; Fig. 15, 1504a, 1504b; Fig. 17, 1704). However, just as with Ozeki and Auracher, Frankel fails to disclose or suggest a shared waveguide operatively coupled

between emitters and receivers, wherein the waveguide includes a "scattering medium" as recited in the Applicants' claims 1-22.

For at least these reasons, the Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

The Applicants believe the above amendments and remarks to be fully responsive, thereby placing this application in condition for allowance. Favorable action is solicited. The Examiner is kindly invited to contact the undersigned attorney by telephone, facsimile, or email for quickest resolution, if there are any remaining issues.

Respectfully submitted,



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